

history of lues who are suspicious of beginning tabes or general paralysis. Together with the Wassermann reaction in the blood serum and cerebrospinal fluid, they may help in determining the nature of apparent idiopathic epilepsy or in distinguishing brain tumors from syphilitic disease. They must be used, of course, only in conjunction with the general clinical picture, and their value can only be properly judged after the lapse of sufficient time to accumulate many more cases than are now on record. The recent article of *Williamson* emphasizes the necessity of caution in judging of their value.

It is unwise to practice lumbar puncture indiscriminately, as it is a procedure not without disagreeable sequelae at times, particularly in neurotic patients with unstable vasomotor systems. There may be severe headache and dizziness for some days following puncture.

CONGENITAL DISLOCATION OF THE HIP.*

By HARRY M. SHERMAN, M. D., and GEORGE J. MCCHESENEY, M. D., San Francisco.

At the meeting of this Society held in Fresno I reported the first of the cases of congenital dislocation of the hip that I had attempted to correct. The report was but a preliminary one and covered several cases in which the reduction had been accomplished through an incision with deepening of the acetabulum according to the earlier technic of Lorenz, and also a smaller number of cases in which the reduction had been attempted by the manipulative method of Lorenz, as it was then practiced.

I revert to this now, for I then promised to report the late results in these cases, and I can now only make a partial report because of the disappearance of all but a very few of these patients from my observation.

Of those reduced through an incision with deepening of the acetabulum I can report but one, for I cannot find the others. This was the second patient I had operated upon for the condition. The reduction has remained stable, but free motion has never been attained; in fact the reverse was noted, the hip has become progressively stiffer, the limb has gone into adduction and become shorter while at the same time a coxa vara has developed. To correct the coxa vara and lessen the shortening I some time ago did a subtrochanteric osteotomy and gave the limb good abduction, but again it is slowly going into adduction. In spite of these faults, the girl's walk is easy, though there is a little irregularity in the step; she does not tire readily and she is free from the classic deformity of a dislocated hip. She is, in short, much benefited but has not been accorded an ideal result.

As the chief late finding in this case I note that *the acetabulum is at a higher level than is normal*; that is, the deepening of the acetabulum, which involved epiphyseal lines, interfered certainly with the growth of the ilium and probably that of the ischium

and pubis, as we would expect it to do in any of the long bones.

To the manipulative cases that I reported in Fresno, I can easily add all I have done. There have been thirteen hips and twelve failures. The one success has been ideal and incomparable, for the child has had vertebral tuberculosis and tuberculosis of the nondislocated hip. During his convalescence from these infections he wore a large and complex apparatus to hold the spine and the hip, and did his walking on crutches and the hip which had been dislocated, and *it never failed him*. He is now again well and of his two hips the one which had been dislocated is the better, though the other, which has recovered from the tuberculosis, is a good practical hip joint.

The remote likelihood of getting a satisfactory percentage of anatomical reductions by manipulation led me, in a child in whom the apparent reduction had immediately redislocated, to make a second reduction and then, while the bone was held in place by another, I cut down upon the hip and inspected the parts. This was done on the 28th of May, 1898, and the note, made immediately after the operation, reads: "The Lorenz operation, except that the acetabula were not hollowed out. The left hip had not been definitely replaced, a fold of capsule being between the head and the acetabulum. The right hip seemed to have been properly replaced at the time of the manipulation. In each case the capsule was sutured, on the left side it being overlapped and the upper portion stitched to the anterior part of the trochanter, on the right side a fold was taken in the capsule by the sutures. Deep catgut and superficial silkworm gut sutures. Gauze drains. Double plaster of Paris spica, legs abducted about 20° each." The last note in the history, made a year later, in April, 1899, states that an anterior relaxation had occurred on each side, so that all that had been attained was a double anterior transposition.

The obstacle of the infolding capsule was not a new discovery, for others had found it before and had described it. It was due to a constriction in the capsular ligament of the hip, which was located between the acetabulum and the femoral head. Such a capsule, removed from the bony parts, would be seen to consist of two expanded parts, one to apply to the acetabular rim and the other to envelop the femoral head and attach to the base of the neck; between these two expanded parts would be a narrow part. Bradford has called the narrow part the "hymen of the acetabulum." Lorenz called the acetabular expansion the "pocket of the acetabulum," and the narrow part was naturally the opening and, of course, smaller than the pocket. This narrow part is smaller than is the femoral head. So it is impossible to make the femoral head pass through it unless one can absolutely accurately apply the femoral head to it and press hard enough and long enough to stretch it. Reasoning theoretically, one might say this could be done; but when one has had the opportunity of putting his finger into this nar-

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row space, as I have had, and can know, as I do, how narrow it is and how firm is the capsule, which is all gathered together into a special thickness and which has been carrying the child's weight at every other step, he must be an optimist to believe that *without seeing* he can apply the bigger femoral head to smaller orifice, and then can, within any time that can be devoted to an operation, force it through. Only twice have I found the opening large enough to permit the passage of the head; in every other instance it has been too small to admit more than the tip of my finger.

The child whose hip condition after manipulative reduction had been exposed by incision was the first patient in whom I did not deepen the acetabula, and while my records show that I did deepen the socket in four other cases subsequently, the comparison of this child with the others was the basis for my finally abandoning the procedure.

When the acetabulum is deepened by cutting out the cartilage of the floor, it exposes cancellous bone as soon as the epiphyseal line has been passed. In the process of repair granulation tissue must spring from this bared bone and it enwraps the femoral head and attaches to it and so limits the range of motion. In no case where the acetabulum has been deepened has normal motion resulted and in some cases all motion has been inhibited, a practical ankylosis. Against a *manipulation* which succeeded in producing an anatomical reduction, the cartilage of the head being put in contact with the cartilage of the acetabulum and no capsule being infolded and which gave an ideal and permanent result, no argument can stand. The only objection to the manipulative method would be the presence in the statistics of a large percentage of children in whom the anatomical reduction could not be gained by any operator because of the infolding of the capsule. If an operation by *incision* could always accomplish an anatomical reduction, as just described, and the permanence and joint mobility were equal to those points in the ideal manipulative result, the operation by incision would be better than that by manipulation by just as much as 100 per cent is better than the lower percentage of the manipulative methods. On this argument I abandoned attempts at manipulative reduction, and for the reason I stated a moment ago, I abandoned deepening the acetabula.

But there was still another obstacle. I found that while these hips left me in seemingly stable reduction they came back in a few months or a year with the head again out of the acetabulum. This relaxation was always forward and the head lay under the long head of the rectus and beneath the anterior inferior iliac spine. This left the final result an anterior transposition and nothing more.

Lorenz had pointed out that in many of these cases there is a twist of the femoral shaft so that the head and neck point almost directly forwards, or at any rate much more forwards than is normal, and the trochanter looks commensurately backwards. This means that, to give the head and neck the proper direction so that they can enter the acetabulum with the proper relations to the socket, the

whole limb must be rotated inwards from 45° to 90° , or so that the toes point inwards. Now if, later, the toes are permitted to point forwards again, the head of the femur also comes forward, the back part of the neck rides on the posterior rim of the acetabulum and the head is lifted out of the socket and slips up above it and external to it, into the position of anterior transposition.

To control this I adopted the osteotomy which Lorenz had practiced and advised, a subcutaneous subtrochanteric linear osteotomy with this technic: While the foot is held rotated inward strongly a long nail is driven well into the trochanter but not through it; the osteotomy is then done just below the trochanter; now while the trochanter, neck and head are held in normal relation to the acetabulum by the nail, the projecting end of which is grasped by the fingers or a forceps, so that part of that bone cannot move, the limb below the osteotomy is rotated outwards until the toes point forwards. This gives the neck and head a practically normal relation to the shaft, and when the toes point forwards the neck and head point inwards, upwards and only a little forwards; the head enters the acetabulum with the proper relations to that socket, and there is no tendency for it to rotate forwards and leave the socket. This gave me anatomical reductions which were permanent; the joints had ample or normal ranges of motion; there was no interference with any developmental process of the bones of the pelvis or femur.

In all there have been 64 hips in 53 children under my care. Of these 42 hips in 36 children have been reduced through the incision, and of these again 14 hips in as many children have had the osteotomy done.

Of those without the osteotomy, 28 hips in 22 children. The oldest was 11 years, the youngest $1\frac{1}{2}$ years, and the average age 3 1-3 years. One hip in a girl 11 years old, relaxed and I was never permitted to attempt a second reduction; 7 hips have definitely gone into the anterior transposition; 1 hip has stable reduction, free motion, but a coxa vara has developed; 2 hips have stable reduction, partial ankylosis and coxa vara; 1 hip has stable reduction and complete ankylosis; 1 child with 1 dislocated hip died of infection of the incision; 4 children with 4 hips have not been heard from; 5 hips are satisfactory to parents and home physicians, and there are 6 hips which we have examined personally and know to be practically normal hips—that is, there is no limp even when the child is tired, all possible gaits are equally easy and the child does not fatigue readily.

The relaxations are due to our failure to appreciate earlier the importance of the forward twist of the neck and head as a relaxing cause. In the earlier days we were content to take a radiogram of the hips with the toes pointing forward and accepted the picture as a statement of the shape and size of the neck and head. Then we discovered that this was not enough and so two radiograms are always taken, one with the toes pointing forward, and this shows, if there is a twist, the head looking forward

and the neck foreshortened; the other picture is taken with the limb rotated in so that the toes point to the opposite foot, and then we get a profile of the upper end of the femur which gives an adequate idea of the length and direction of the neck and the size of the nucleus of the head.

It is to be noted that if there is but one hip dislocated the ossifying nucleus in the femoral head on the side of the dislocation is always smaller than that on the normal side. The radiograms all show, also, a deficient overhanging lip of the acetabulum, so that the resistance to the upward thrust of the head in carrying weight is less than in a normal hip.

From what has been said it is easy to see that the cases in which osteotomies have been done have been those cases that have come to us more recently, as in the last three years. There have been 14 hips in which osteotomy has been done. Of these the oldest was 5 years, the youngest was $1\frac{1}{2}$ years, and the average age was $2\frac{3}{4}$ years. Of these two are in anterior transposition due to suppuration around the nail, so that it loosened and failed to hold the trochanter rotated forward, but instead permitted it to swing back to its original relation to the shaft. These were then the same as if no osteotomy had been done. Seven hips in as many children have given perfect practical results; that is, the reduction is stable, there is free motion in ample range, there is no obvious limp even when the child is tired, and the child does not tire readily. Five hips are still under treatment, and while all are doing well, they are not sufficiently advanced to permit me to report on them in any other way.

The importance of the osteotomy in our estimation is very great and the need for it can be most accurately estimated by the radiograms of the hips in the two positions. Reduction, whether that be done by manipulation or through an incision, is, in the cases with anterior twist, most likely to be unstable and relaxation to the position of anterior transposition is common unless the osteotomy be done. With the osteotomy the proper relation of the head and neck of the femur to the rim and socket of the acetabulum can be secured and so the tendency to relaxation avoided.

With this technic of reduction through an incision, which really reduces, and osteotomy when it is necessary to fit the component parts of the joint to each other, we feel that we can give to our patients a full 100 per cent of their chances for a practical joint. We cannot recreate bony deficiencies nor perfectly fit together wholly mismatched parts, but with a practical acetabulum and a practical head and neck, we think the method should give a practically normal joint.

A joint is a mechanical contrivance and the test of its mechanic competence is its functional competence. A joint which has a functional competence equal to that of a normal joint, is itself a normal joint. In many instances the radiogram may show variations in shape, size and other details from the generally accepted form, but if the function is equal to that of a normal joint we claim that it is a normal joint.

PELLAGRA IN CALIFORNIA.*

By RUPERT BLUE, Surgeon United States Public Health and Marine-Hospital Service.

History.—Pellagra was first described by Casal of Spain in 1735. It next attracted attention in Italy in 1771, and was named pellagra (meaning rough skin) by Frapolli at that time. As early as 1810 Marzori called attention to the relation between maize eating and pellagra. The late Professor Lombroso, of Milan, probably devoted more time to the study of the etiology of the condition than any other single observer. During the course of his investigations he became convinced that the syndrome was produced by a toxin occurring in damaged corn. Tizzoni advanced the theory that the disease was of bacillary origin. This, however, has not been proven.

The prevalence of the disease in this country was not positively known till Searcy of Alabama reported the outbreak which occurred in the State Hospital for the Insane at Mt. Vernon in 1907. Since that time cases have been reported from various parts of the United States by Wood, Watson, Babcock and Lavinder. The latter in a report to the Surgeon-General estimated the number of pellagrins in the United States to be one thousand five hundred. I think this falls far short of the actual number. The chief seats of the disease are the corn-producing states or where corn is used as a staple article of diet, as in the southern states and in Indiana, Illinois and New York. I am of the opinion that pellagra can be found to-day in nearly all of the insane asylums and almshouses of this country. In fact, it may be one of the most prolific causes of insanity, invalidism and poverty.

In the United States as in Italy, the disease is confined almost wholly to the laboring classes. Wood states, however, that it affected all classes alike in the cases studied by him.

Etiology.—As with other diseases of which the cause is not definitely known, those who have studied it have arrived at widely divergent views regarding its etiology. In a general way there are two prevalent theories, the one holding that there is a definite relation between Indian corn and the disease, and the other maintaining that this view is incorrect. The maize theory of the etiology may be classed under three heads: (1) It is an intoxication; (2) it is an autointoxication; (3) it is a specific infection either by bacteria, molds or protozoa. The question of the communicability of the disease has also received considerable attention. This question may be considered as still *sub judice*, but I do not believe that the evidence thus far presented warrants us in the belief that pellagra is contagious or infectious, or in establishing quarantine against it. Thus far the only fact which seems to offer any hope is the occurrence of the disease chiefly among those subsisting on a corn diet which has undergone fermentative changes. Alcoholism, insanitary surroundings and its coincident train of diseases act as predisposing causes.

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